

COPY FOR IB

PCT/KR2005/000914

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

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PCT

REC'D 05 JUL 2005

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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year) 28 JUNE 2005 (28.06.2005)Applicant's or agent's file reference
opul050003

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/KR2005/000914

International filing date (day/month/year)

29 MARCH 2005 (29.03.2005)

Priority date(day/month/year)

29 MARCH 2004 (29.03.2004)

International Patent Classification (IPC) or both national classification and IPC

IPC7 H01B 1/04

Applicant

CENTECH CO., LTD. et al

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/KR

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

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PCT/KR2005/000914

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-21	YES
	Claims	None	NO
Inventive step (IS)	Claims	11-15	YES
	Claims	1-10, 16-21	NO
Industrial applicability (IA)	Claims	1-21	YES
	Claims	None	NO

2. Citations and explanations :

D1 JP 04-011658 (TOSHIBA SILICONE CO. LTD.) 16 January 1992

The present invention(henceforth PI) is the conductive composition for carbon flexible heating structure and its manufacturing method. D1 relates the conductive silicon rubber composition incorporating carbon black. It has an improved cure rate, and gives a cured article having an increased crosslink density by using a specific furnace black as the carbon black.

1. Novelty

The silicon rubber and carbon black are used as the components of conductive composition in PI & D1. However, PI imposes the limitation on the weight ratio between silicon rubber and carbon black. Other technical features of PI such as the amount of DBP absorption, the addition of diluent, structuring into a mesh, a rod, a plate, or a bar, reinforcing materials with short staples, etc. are shown in PI. Therefore claim 1-21 meet the requirements of PCT Article 33(2) in respect of novelty.

2. Inventive step

D1 and PI comprise the silicon rubber and carbon black as the key components of inventions. Both of them have the similar range of DBP absorption amount and its manufacturing method as well. The conductive composition of D1 is composed of carbon black and silicon rubber absorbing DBP more than 200ml/100g as seen in the right column of p454. The differences in technical features between D1 and PI are found in the replacement of carbon black with graphite, the addition of diluent to give the easy flow of conductive composition, and forming the carbon flexible heating structure by molding the conductive composition.

The subject matter of claim 1-5, 16-18, 20 consists in the selection of components weight ratio, particle size of carbon black or graphite, the range of electrical resistance, thermal expansion coefficient of silicon rubber and the thickness of paste. Such a selection can only be regarded as inventive, if they present unexpected effects or properties in relation to the rest of the range. However, no such effects or properties are indicated in the application. Hence, no inventive step is present in the subject matter of claim 1-5, 16-18, 20.

(to be continued on supplemental box)

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Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

The vague and imprecise statement in the description in claim 18 ("The method of claim 16 ... graphite powder") implies that the subject matter for which protection is sought may be different to that defined by the claims, thereby resulting in lack of clarity (PCT Article 6) when used to interpret them (see also the PCT Guidelines, III-4.3a) since filler is carbon black in claim 16. In other words, claim 18 can be regarded as the conductive composition has silicon rubber, carbon black and graphite powder.

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of:

In claim 6-10, 19, 21, the addition of diluent and shaping the carbon flexible heating structure into a mesh, a rod, a plate, a ring or a bar is defined which comes within the scope of the customary practice followed by persons skilled in the art, especially as the advantages thus achieved can readily be foreseen. Consequently, the subject matter of claim 6-10, 19, 21 also lacks an inventive step.

3. Industrial Applicability

The conductive composition for carbon flexible heating structure and its manufacturing method is industrially applicable and fulfills the requirement of industrial applicability(Article 33(4) PCT).